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Director, Missile Defense Agency
Missile Defense Program and Fiscal Year 2008 Budget
Before the
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Defense Subcommittee
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Good afternoon, Mr. Chairman, Representative Young, distinguished Members of the Committee. It is an honor to present the Department of Defense's Fiscal Year (FY) 2008 Missile Defense program and budget.

I am pleased to report that 2006 was a year of significant accomplishment for all aspects of our missile defense program. We made substantial progress in developing, testing and fielding an integrated, layered Ballistic Missile Defense System (BMDS) to defend the United States, our deployed forces, and our allies and friends against ballistic missiles of all ranges in all phases of their flight.

Of the \$8.9 billion we are requesting in Fiscal Year 2008, we will allocate \$7.1 billion for near-term efforts and \$1.8 billion for longer-term programs. In the near-term, we seek to build on, and sustain, our current capability to defend the homeland against limited long-range ballistic missile threats and protect allies, friends and deployed forces against short- to medium-range threats. To achieve this goal, we intend to complete by the end of 2011 the fielding of up to 44 Ground-based Interceptors (GBIs) in Alaska and California; enhance our early warning radars in Alaska, California and the United Kingdom; integrate the Sea-based X-band (SBX) radar into the BMD system; deploy up to 132 sea-based Standard Missile -3 (SM-3) interceptors on 18 Aegis engagement ships; and expand our command, control and battle-management network by establishing three

new command and control suites at U.S. Strategic Command, U.S. Pacific Command and U.S. Northern Command.

We also seek to close gaps and improve our capability to defend against a growing Iranian threat. We will continue the initiative we began this year to field 10 long-range interceptors and a midcourse radar in Europe beginning in 2011. This initiative is essential for a robust, layered defense of the homeland against long-range threats from the Middle East. It will also extend this defense to our deployed forces, allies and friends in the region who currently have no defense against longer-range ballistic missiles. To improve our capabilities to defeat more complex threat suites, our Multiple Kill Vehicle (MKV) program will allow us to engage multiple warheads and countermeasures with a single interceptor launch. Delivering this volume kill capability is important to the warfighter and is one of our top priorities.

For the longer-term, we are developing the Space Tracking and Surveillance System to provide a persistent, near-real-time global detection, tracking and fire control capability. This system will significantly increase the BMD system's agility and flexibility to respond to future worldwide emerging threats. We also continue to pursue boost-phase intercept capabilities in order to increase the "depth" of our integrated, layered system. Boost-phase defenses promise to increase our intercept opportunities and destroy enemy ballistic missiles when they are most vulnerable. The Airborne Laser (ABL) remains our primary boost-phase program. Based on the Defense Science Board's recommendation, we're continuing the high-acceleration Kinetic Energy Interceptor (KEI) booster development effort as an option in the event ABL does not

meet critical knowledge points in its test program. The U.S.-Japanese cooperative development of a follow-on SM-3 interceptor to give the Aegis system an intercontinental ballistic missile (ICBM) intercept capability, a robust Sea-Based Terminal capability to defeat shorter-range threats, a modest experimental Space Test Bed, and our continuing advanced technology efforts all support the goal of closing capability gaps in the system.

The Evolving Security Environment

This past 4th of July, millions of Americans were made aware of just how real the threat from ballistic missiles is and how vital the missile defense program is to our national security. With the launches of the short-, medium- and long-range missiles by North Korea, missile defense became an urgent matter overnight. Because of the efforts of thousands of Americans dedicated to this program, we were able to activate a missile defense system to protect the United States had a threat emerged.

In November 2006 and January 2007 Tehran conducted several short- and medium-range ballistic missile and rocket launches. In the November exercises Iran demonstrated for the world its offensive capabilities via televised broadcasts.

North Korea and Iran dedicate significant resources to acquiring ballistic missiles, to include new medium- and intermediate-range systems capable of reaching forward-deployed United States forces and our allies and friends. North Korea continues to work on intercontinental-range systems capable of reaching the United States. In addition, our intelligence community assesses that Iran would be able to develop an ICBM before 2015

if it chose to do so.¹ With the missile firings over the past year, they have also demonstrated the ability to conduct coordinated launch operations. But they are not alone.

In 2006 there were about 100 foreign ballistic missile launches around the world. This year to date, the pace of testing is about twice that of last year--a trend reflecting the determination of many countries to acquire these capabilities.

The actions of North Korea and Iran this past year demonstrate the determination of these rogue regimes to achieve this capability and potentially weapons of mass destruction to further aggressive ends. With the proliferation of ballistic missile technology, we expect to be surprised by unexpected and more robust threats. The missile defense development program recognizes that we must stay a step ahead of a dynamic threat.

U.S. Ballistic Missile Defenses—A Report Card

In January 2002, just a little more than five short years ago, the Secretary of Defense directed the Agency to restructure the missile defense program to deal with the urgency, enormity and complexity of developing, testing and building a missile defense system. This bold initiative required the adoption of an evolutionary acquisition strategy to be executed by a single agency, a strategy that relies on continual assessments of the threat, available technology, and what can be built and fielded to provide a militarily useful capability in an urgent manner.

¹ Vice Admiral Lowell E. Jacoby, USN, Director, Defense Intelligence Agency, "Current and Projected National Security Threats to the United States," *Statement before the Senate Armed Services Committee*, 17 March 2005, p. 11.

Having capitalized on our steady progress since the 1980s, the dedicated men and women of the Missile Defense Agency and our industrial partners delivered to the Combatant Commanders in 2004 an initial missile defense capability to defeat the near-term long-range missile threat. Supported by an extensive command, control, battle management and communications (C2BMC) infrastructure, we connected additional system elements to the fire control system and put in place trained system operators, the logistics support infrastructure and support centers required for this limited operational system.

To date, we have made significant, and in many ways, unprecedented strides to deliver a capability where none existed before. Since 2002 we have fielded and completed the initial integration of land- and sea-based interceptors, mobile and fixed sensors and command, control, battle management, and communications suites to deliver one of the most complex and comprehensive defensive capabilities ever envisioned. And we did so while sustaining an aggressive development program that continues to feed new technologies into the system.

Mr. Chairman, the missile defense investments of four Administrations and eleven Congresses are paying off. With the initial deployment of a limited missile defense capability, the era of absolute vulnerability of our country to a long-range missile attack came to a close. This is important, because I believe a capability against even a single reentry vehicle has significant military utility. The modest long-, medium-, and short-range defensive capabilities we have today can help reduce the more immediate threats to our security and enhance our ability to defend our interests abroad.

Long-range defenses. As part of our strategy to protect the United States from ballistic missiles launched from North Korea or Iran, we have emplaced high-performance interceptors in missile fields at two sites and integrated them into the system. The system's Ground-Based Interceptors use hit-to-kill technologies to destroy intermediate- and long-range ballistic missile warheads in space, in the midcourse phase of flight. These are the only weapons we have available today to defeat longer-range threats once they have been launched. With 18 interceptors emplaced today, we plan to increase interceptor inventories at Fort Greely, Alaska and Vandenberg Air Force Base, California up to 24 by the end of this year.

The system today will receive a cue from Defense Support Program satellites or from one of sixteen long-range surveillance and track Aegis destroyers that could be stationed near the threat region. These satellites and ships can pass detection or cueing data across communications lines into BMD system communication and battle manager nodes located in Fort Greely and Colorado Springs. Today we stand ready to locate and track threats coming out of East Asia using the Cobra Dane radar in the Aleutians and the upgraded early warning radar at Beale Air Force Base, California.

Powerful X-band radars located on a mobile platform in the Pacific Ocean and at Shariki, Japan can provide precise tracking and discrimination to increase the probability we will destroy any lethal target. A 2006 independent assessment concluded that the Sea-Based X-band radar, which deployed to the Pacific at the end of 2005, is sufficiently rugged to operate in the rough seas of the northern Pacific. These conditions were validated this past winter when the SBX experienced extremely hazardous weather with

negligible impact. Also in 2006, we deployed the first forward-based X band radar to Japan, accelerating its deployment and supporting C2BMC equipment to its operational location in Shariki Japan, achieving partial mission capability in October 2006.

Short- to medium-range defenses. Since 2004 we have expanded and improved terminal and midcourse defenses to defeat short- and medium-range threats from land and sea. Aegis ships have been periodically put on station in the Sea of Japan to provide long-range surveillance and tracking data to our battle management system. We began fielding Standard Missile-3 interceptors in 2004, evolving to a more capable interceptor. With our growing inventory of Standard Missile-3 interceptors on Aegis ships, we can provide a flexible sea-mobile capability to defeat short- to intermediate-range ballistic missiles in their midcourse phase. In 2005 we upgraded the first Aegis cruisers for the engagement mission. Today we have available three Aegis BMD engagement cruisers and four engagement destroyers.

Having successfully transitioned the Patriot Advanced Capability-3 (PAC-3) to the U.S. Army in March 2003, we continue to maintain configuration control and work with that Service to improve and upgrade PAC-3 and Medium Extended Air Defense System (MEADS) performance. Today, PAC-3 fire units are being integrated into the forces of our allies and friends, many of whom face immediate short- and medium-range threats.

Integrating the system. For the ballistic missile defense system to work effectively, all of its separate elements must be integrated across several Combatant Commands. This capability allows us to mix and match sensors, weapons and command centers to dramatically expand detection and engagement capabilities over what can be achieved by

the system's elements operating individually. Combatant Commanders can use the C2BMC infrastructure to enhance planning, synchronize globally dispersed missile defense assets, and manage weapon inventories. These capabilities also can provide our senior government leadership situational awareness of ballistic missile launches and defense activities. Today we have in-place a planning capability within U.S. Strategic, Northern, and Pacific Commands.

Supporting the warfighter. This past year we continued work with U.S. Strategic Command and other Combatant Commands to train missile defense crews at all echelons, ensuring that they can operate the ballistic missile defense system if called upon to do so. We established a BMD Operations Watch Officer to provide real-time BMD situational awareness, operational status, and coordinate the configuration of the system and have executed a series of exercises, which involve temporarily putting the system in a launch-ready state.

We have set up a process to collaborate with the Combatant Commanders and the Military Services to define and prioritize requirements as the system evolves. For example, we did not have a sea-based terminal layer planned for the program until the Commander of U.S. Strategic Command identified this as a desired capability. Once this need was identified, we worked with the Navy to define and budget for near- and far-term programs for a Sea-Based Terminal defense. We also have worked closely with the Services and the Office of Secretary of Defense on transition and transfer activities to address operations and support of the system elements. The Deputy Secretary of Defense identified lead Military Departments for eight elements of the BMDS, and the Navy has

just agreed to take on lead service responsibility for the Sea-Based X-Band Radar. We have developed Transition and Transfer Plans with the Services and the Combatant Commands. These plans capture both agreements and the roles and responsibilities associated with evolving operations and support activities. This collaboration with the warfighter includes training, testing, wargaming, and conducting exercises and simulations, all of which help demonstrate and improve the capability and reliability of the missile defense system.

BMD System On Alert. As I stated earlier, when the North Koreans conducted their launches last summer, for the first time in the history of the United States, we had the capability to defend our people against a long-range missile had it been necessary. Working closely with U.S. Strategic Command's Joint Functional Component Commander for Integrated Missile Defense, we successfully took the system out of the development mode and handed it over to the warfighter for operation. This activation of the system last June helped us to refine procedures and taught us invaluable lessons about system operations.

Alert activities included activation of the Ground-based Midcourse Defense and the deployment of a missile defense capability to the Sea of Japan. We had Aegis long-range surveillance and track ships stationed east and west of Japan during the missile firings. Data collected from these sensors would have helped identify whether the long-range launch was a ballistic missile or a space launch vehicle and would have provided tracking data to the system. The C2BMC situational awareness displays were operational and being monitored at the various commands.

We also accelerated the capability of the forward-based X-band radar in Japan for data collection. The Sea-Based X-band radar was stationed off Hawaii and similarly standing by for data collection. At the time, the forward-based radar and the sea-based radar were not integrated into the system. Given these events from last summer and our ability to bring the system on line and prepare it for emergency use, I am very confident that the system would have operated as designed had the Taepo Dong-2 threatened the United States.

We have an operational system today because of the capability-based acquisition approach we have followed since 2002. This approach leverages collaboration with the warfighter community throughout development and testing to the point where we transition or transfer capabilities to the operators. Some have asserted that our non-traditional approach lacks discipline, transparency, and/or accountability. I do not agree. I think the progress we have made to date in fielding a missile defense capability speaks for itself and justifies the continuation of this approach. Had we followed the traditional acquisition approach, we would not have had an operational capability to respond to the potential threat from North Korea. Had we followed the traditional approach, I believe we truly would have “delivered less at a higher cost.”

The missile defense program is highly scrutinized by the Department of Defense, the Congressional Budget Office, the Government Accountability Office, and the Congress. In 2004 Congress required the Missile Defense Agency to submit a cost, schedule and performance baseline for each block configuration of the BMDS being fielded. We have complied with this law every year, describing our baseline in terms of

two-year increments of capability called fielding blocks. From an acquisition process perspective, I understand that we are blazing new trails, and the information we provide is therefore different from what people are used to seeing. I understand the onus is on us to clearly convey to Congress that we are fielding ballistic missile defense capability in a responsible and transparent manner, and I am committed to doing that. I have therefore directed my staff to complete a review of our current approach and look at ways to better describe our baseline program.

Use of Procurement Funds Would Set Back Missile Defense Progress

In 2002 the Department of Defense directed the Missile Defense Agency to use Research, Development, Test and Evaluation (RDT&E) funding to develop and field a single integrated missile defense system outside the traditional acquisition process. This direction gave MDA the ability to make knowledge-based decisions and incrementally fund system element and component quantities, combinations, and upgrades to support accelerated fielding and keep pace with an evolving, uncertain threat.

The use of RDT&E funds makes possible a development and fielding approach that: 1) provides flexibility to pursue multiple development paths, reducing risk inherent in BMD system engineering by allowing MDA to scale back on less promising efforts; 2) demonstrates what works and what does not; 3) allows for flexible responses to changes in the evolving threat; and 4) facilitates technology-based improvements during development and fielding phases

The flexibility in the current Missile Defense Program was highly advantageous for the nation this past summer when the North Koreans launched short-, medium-, and long-range ballistic missiles, making missile defense an urgent matter overnight. If we had used procurement funding at the start of the missile defense program in 2002, we arguably would not have had a system to activate to meet the possible threat to our security this past July. The average major defense acquisition program has a cycle-time of six years between Milestone B (program start) and Milestone C (authorization for production). Assuming the BMDS had received Milestone B approval in 2002, MDA would have been seeking Milestone C approval in 2008 before it could begin procurement and fielding of the long-range missile defense system. The traditional acquisition process simply does not accommodate the development and fielding of a complex and military useful ballistic missile defense capability on an urgent timeline.

However, if we were told today to use procurement funds to field BMDS assets rather than incrementally fund them across the FYDP, as we have done for the last four years with Congressional support, I think it is important to understand the impacts. Procurement funding would complicate the ability to respond with agility to the evolving threat and limit MDA's ability to implement efficiencies and improvements in the BMD system.

The required use of procurement funding also would narrow significantly the content of program work (decreasing our development options for meeting future threats). For example, MDA would be forced to pay for all current on-going fielding

programs in one fiscal year or stretch out the fielding of near-term assets over a longer period of time than currently planned. This requirement could add as much as \$3.3 billion in additional cost to our projected budget in FY 2009 alone. To pay for this shortfall in one fiscal year, MDA would have to terminate, for all practical purposes, most of its development efforts, eliminating options for future capabilities and compromising the current system engineering and testing processes. The alternative would be to delay current fielding activities of critical assets such as the Ground-Based Interceptors, the Standard Missile – 3 and the Terminal High Altitude Area Defense System. And this would only be the start.

Changing the funding approach also would restrict or eliminate the Agency's ability to make responsive schedule and funding adjustments, as was done with the flight-test stand-down in early 2005. Another example was the adjustment we made to the Standard Missile–3 missile fielding as a result of design issues associated with the third stage rocket motor and the Divert and Attitude Control System. The ability to make these adjustments allowed the Agency to implement key recommendations of the Mission Readiness Task Force that have since put the long-range test program back on track. The restrictions in program flexibility imposed by the use of procurement funding would have greatly limited the Agency's ability to accelerate last year's deployment of the forward-based X-band radar to Japan and hindered the actions it took to recover Ground-Based Interceptor and THAAD interceptor production capabilities following the 2003 booster motor plant explosion at a key contractor facility.

I remain committed to working with the Congress to develop a new approach allowing the continued use of RDT&E funding while providing Congress with the information it needs to ensure accountability and oversight.

Building Confidence through Spiral Testing

Testing under operationally realistic conditions is an important part of maturing the system. We have been fielding test assets in operational configurations in order to conduct increasingly complex and end-to-end tests of the system. While the BMD system is a developmental system, it is available today to our leadership for activation to meet real world threats. Given this dual function of the test bed, the Operational Test Agencies and the warfighting community are very active in all phases of our test planning, execution, and post-test analysis.

Using criteria established by the Agency's system engineers and our warfighters, all system ground and flight tests provide data that we and the operational test community use to verify the system's functionality and operational effectiveness. Our flight tests are increasing in operational realism, limited only by environmental and safety concerns. Each system test builds on the knowledge gained from previous tests and adds increasingly challenging objectives, with the downstream goal of devising scenarios that test elements of the system from end-to-end. This spiral test approach increases knowledge of, and confidence in, the system performance while maintaining safety and minimizing artificiality.

Last year I explained that we had several concerns with quality control and reliability that led to two successive Ground-based Midcourse Defense test aborts, problems that we have since comprehensively addressed. The independent review team concluded that the deficiencies in systems engineering, ground qualification testing, flight test readiness certification, contractor process control and program scheduling were not systemic and did not compromise initial defensive capabilities. I testified last year that I did not view the failures as major technical setbacks.

Coming off the very successful fly-out of the operational configuration long-range interceptor in December 2005, we conducted a long-range intercept flight test last September that exceeded our objectives. That complex test involved an operationally configured interceptor launched from an operationally configured silo at Vandenberg Air Force Base, operational sensors, and operationally trained crews manning the fire control consoles. The test demonstrated the functionality of the Exo-atmospheric Kill Vehicle and the ability to engage a threat-representative target using the Upgraded Early Warning Radar at Beale Air Force Base in California. After the kill vehicle acquired the target launched out of the Kodiak Launch Complex in Alaska nearly 3,000 km away from the engagement zone, it successfully intercepted it. While it was not hooked into the system, we also demonstrated the powerful contributions the Sea-Based X-band radar can make in the areas of tracking and discrimination. This was our most operationally realistic, end-to-end test of the system involving the Ground-based Midcourse Defense element to date.

Over this past year the Missile Defense Agency conducted more than 35 major tests and successfully met our primary test objectives in 14 out of 15 flight tests. In fact, during a 90-day period last summer, we achieved successful hit-to-kill intercepts in the lower atmosphere with the Patriot Advanced Capability-3, in the upper reaches of the atmosphere with the Terminal High Altitude Area Defense element, and in space with the Aegis Standard Missile-3 and the Ground-Based Midcourse Defense elements. Including tests of the Patriot Advanced Capability-3, we achieved seven hit-to-kill intercepts of ballistic missile targets in eight attempts in 2006. Since 2001, we have built a record of 26 successful hit-to-kill engagements in 34 attempts. Our test plans for 2007 and 2008 will continue to use more complex and realistic scenarios for system-level flight tests.

We plan three more long-range interceptor flight tests by the end of this year that continue to push the edge of the envelope in testing complexity. All tests will continue to use operationally trained crews and the operational launch site at Vandenberg. We plan to integrate the Sea-Based X-band radar into the system for the intercept test in late summer as we continue to expand the number of sensors available to us to cue the system and engage targets.

On June 22 of last year, we successfully used a U.S. Navy Aegis cruiser to engage a separating target carried on a threat-representative medium-range ballistic missile. As we had done in the past three flight tests, we did not notify the operational ship's crew of the target launch time, and they were forced to react to a dynamic situation. The role of the crew is an important part of our ability to engage hostile missiles, and last December we increased test complexity by attempting a simultaneous engagement of aerial and

ballistic targets and by using operator-selectable parameters to allow for automatic identification of targets. A crew member changed the ship's doctrine parameters just prior to target launch. This modification prevented the ship's fire control system from conducting the planned ballistic missile and aerial target engagements. The primary target was a very short-range ballistic missile, and thus there was insufficient time for manual engagement. When the Standard Missile-3 interceptor failed to launch, we aborted the launch of the Standard Missile-2 interceptor. This is another example of why we conduct tests—to expose flaws in the system and wring out operational procedures. We are working to resolve the problem we experienced in the test last December and expect to conduct it again this spring.

We plan four more Aegis intercept flight tests in 2007. We will again demonstrate the integration of the Aegis BMD weapon system into the overall BMD system and evaluate the ship crew's performance in executing an operationally realistic BMD mission. Early this summer, we will attempt an intercept of a separating, medium-range target using the Standard Missile-3 Block IA interceptor. Later this year, we will demonstrate the ability to engage two near-simultaneous short-range unitary targets. Also late in 2007, as part of our growing partnership with Japan, a Japanese Maritime Self Defense Force Kongo-class ship will attempt to engage a medium-range ballistic missile separating target using the Block IA Standard Missile-3 interceptor. This will be the first such firing by a maritime ally. In 2008 we will engage a separating intermediate-range ballistic missile target using off-board sensor information to launch the interceptor. We will also attempt a second sea-based intercept test with our Japanese partners.

As I mentioned earlier, flight-testing involving the redesigned Terminal High Altitude Area Defense (THAAD) interceptor continued last July with a successful engagement of a unitary target high in the atmosphere. In September we again sought to demonstrate the performance of the new missile and the ability to integrate it into the BMD system, but we were unable to do so following the failure of the target missile. This past January and earlier this month, we again successfully destroyed short-range targets. These endo-atmospheric engagements were the first such tests of the THAAD interceptor at the Pacific Missile Range Facility. To demonstrate the capability of the THAAD fire unit to intercept at different altitudes in the atmosphere and in low exo-atmosphere, we plan one more intercept test in space later this year against a unitary target. In 2008 we plan to demonstrate interceptor capabilities against more stressing targets. We will conduct two intercept tests involving the THAAD interceptor, one against a separating target in space, and the other against a separating target high in the atmosphere. Further, the first test in 2008 will include the launch of two THAAD interceptors. The Missile Defense Agency will also participate in Patriot combined developmental/operational tests as well as Air Force Glory Trip flight tests.

In 2007 we will continue with our successful ground testing, which involves warfighter personnel and test hardware and software in the integrated system configuration to demonstrate system connectivity and interoperability. Upcoming tests will verify integration of the sea-based, forward-based, and Fylingdales radars. The funds we are requesting will support additional capability demonstrations and readiness demonstrations led by the warfighting community. We currently cannot test and train on

the system while it is in full operational mode. To address this problem, we are developing a capability to support continued research, development, test, evaluation, and maintenance while concurrently sustaining operational readiness.

Based on the many tests we have conducted to date, we maintain our confidence in the BMD system's basic design, its hit-to-kill effectiveness, and its inherent operational capability. We continue to work closely with the Director, Operational Test & Evaluation, Operational Test Agencies, and Combatant Commanders to characterize the effectiveness and readiness of the system at every stage in its development and fielding. We are developing the capability to conduct Concurrent Test, Training, and Operations, which will allow Combatant Commanders to keep the system in operational mode while we test, train, and make improvements to the system.

BMD System Fielding Plans

Maintaining and Sustaining the Capability. The top priority of the Missile Defense Agency is to maintain and sustain the deployed initial capability to stay ahead of the North Korean and Iranian threats. This means improving long-range capabilities for homeland defense and moving forward with initial defenses to protect allies and U.S. interests abroad against shorter-range ballistic missiles.

Our program strategy completes the fielding of ground-based interceptors in Alaska and California. We will begin construction in 2007 of a third missile field at Ft. Greely and accelerate delivery of interceptors. We also will begin increasing the number of interceptors available at Vandenberg Air Force Base from two to four. An additional

fifth silo at Vandenberg will be dedicated to testing. We will have up to 30 long-range interceptors deployed by the end of 2008. For midcourse capability against the long-range threat, the Ground-based Midcourse Defense element budget request for FY 2008 of about \$2.5 billion will cover continued development, ground- and flight-testing, fielding and support.

To address short- to intermediate-range threats, in 2006 we added one Aegis engagement cruiser, for a total of three, and three Aegis engagement destroyers. As we convert destroyers this year to add the engagement capability, the number of long-range surveillance and track (LRS&T) ships will fall from 10 at the end of 2006 to 7 and our total number of fully BMD-capable Aegis engagement ships (cruisers and destroyers) will climb to 10. By the end of 2008, we plan to have delivered 13 Aegis engagement destroyers and 3 engagement cruisers and 40 interceptors to inventory. System tests will involve further demonstrations of the sea-based interceptor, and we will continue enhancing the system's discrimination capability. For FY 2008, we are requesting approximately \$1.044 billion to continue Aegis BMD development and testing.

To supplement the Cobra Dane and Beale radars, we will finish the integration work on the Royal Air Force Fylingdales early warning radar in the United Kingdom. It will be fully operational by the end of this year. This radar will provide coverage against Middle East launches against the United States and our allies in Europe. Our FY 2008 budget request for BMD radars is \$758 million. These funds will continue forward-based radar integration work and complete construction of a permanent basing site at Shariki

Air Base. We will also have available for deployment a second forward-based X-band radar.

With this year's budget request of \$247 million for the C2BMC activity, we will continue to use spiral development to incrementally develop, test, and field hardware and software improvements leading to a robust, net-centric missile defense capability that fights as a system. We have made incredible progress in this area despite decrements in funding over the past couple of years. Our ability to defend against highly lethal threats or operate in a very complex, stressing battle environment spanning multiple theaters requires all missile defense elements, which may be spread over thousands of miles, to work together as a "team." Today we can do that. I am very proud of what our national team for integration has achieved. We will press on with the development of the Global Engagement Manager at the Pacific Air Operations Center and integrate into the system the forward-based radar in Japan, the Sea-Based X-band radar, and the Fylingdales radar. We plan to install additional planning and situational awareness capabilities to facilitate executive decision-making in the European Command and the Central Command by 2009.

Closing Capability Gaps. Our long-term strategy is to make the system more robust, reliable and flexible in order to close gaps in our missile defense capabilities. In line with our multilayer approach, the missile defense program in FY 2008 and beyond will expand terminal defense protection, upgrade and improve midcourse discrimination and firepower, strengthen the capability of the BMDS to defeat coordinated attacks, and place increasing emphasis on boost phase defenses.

The missile defense program will improve coverage of the United States and, for the first time, extend coverage to Europe against longer-range ballistic missiles by forward-deploying BMD assets to Europe. Currently, our allies in Europe do not have defenses against Iranian medium- and long-range ballistic missiles, and the BMD system currently deployed to counter the North Korean long-range threat is not technically configured to protect cities in Europe. Therefore, a number of allied governments have expressed interest in deploying defenses against this threat. We have agreed with Poland and the Czech Republic to begin focused discussions on the deployment of long-range interceptors and a midcourse discrimination radar. If negotiations are successful, we plan to modify the X-band radar currently located on the Kwajalein Atoll and relocate it to a site in the Czech Republic.

The deployment of this X-band radar in Europe will complement sensor assets deployed in the United Kingdom and Greenland. In addition to increasing the number of long-range interceptors emplaced at missile fields in Alaska and California, we are hopeful that successful completion of negotiations with the Government of Poland will allow us to start emplacing ten two-stage configurations of our flight-proven Ground-Based Interceptors in Poland beginning in 2011. Central Europe provides an optimal location for the interceptors and radar to protect all European countries threatened by threats greater than 1,500 km out of Iran. These missile defense assets would complement and enhance future North Atlantic Treaty Organization missile defense systems. By devaluing Iran's longer-range missile force, European missile defenses

could help dissuade the Iranian government from further investing in ballistic missiles and deter it from using those weapons in a conflict.

There has been some discussion that the defense of all of Europe from ballistic missile attack would be more cost-effective if we were to replace the fixed missile field, midcourse radar and forward-deployed radar currently planned for Europe with mobile missile defenses. By our calculations, this is clearly not the case. There are serious drawbacks to planning an architecture of mobile systems in lieu of the currently planned fixed architecture.

First, the current configurations of Aegis BMD and Terminal High Altitude Area Defense do not have the ability to counter intercontinental ballistic missiles (ICBMs) without extensive and costly modifications. Likewise, mobile system sensors for Aegis BMD and THAAD cannot provide equivalent radar coverage of Europe. They are designed to be augmented with other sensors, like the European Midcourse Radar, and their interceptors are designed to engage slower short- to medium-range ballistic missiles systems. Without sensor augmentation, Aegis BMD ships, using the SM-3 Block IIA (currently under development and not available until after 2015), would protect approximately only half of Europe against longer-range missiles. Furthermore, the THAAD interceptor would require extensive redesign to be able to intercept long-range threat missiles. Importantly, if these mobile short-range systems achieved an intercept, the intercept would occur in the lower parts of the atmosphere where post-engagement effects, such as chemical, biological, or nuclear weapon fallout and electro-magnetic pulse effects would be of great concern to cities and other civilian areas.

Second, the protection of Europe with mobile systems such as Aegis BMD and THAAD would come at a cost that is more than five times greater to field and sustain when compared to the fixed BMD site plan. It will require 10 Aegis ships on station with SM-3 Block IIA interceptors to provide 40 to 60% coverage of Europe (central Europe would not be protected). To provide this persistent partial coverage, it would require four rotations for a total of 40 ships dedicated to the European defense. Assuming 20 interceptors per ship, we would need 200 SM-3 interceptors for the ships on station and 200 SM-3 interceptors for rotation. This mobile system alternative will initially cost \$17 billion, with recurring costs around \$600 million per year. The command and control infrastructure required to support this mobile alternative would make this approach even more cost-prohibitive. Of note, we did not consider the significant impact on our Aegis ship force levels in this calculation.

The cost for deploying 80 THAAD batteries (the minimum estimate to protect key assets Europe) would be approximately \$40 billion with recurring costs at roughly \$2.4 billion per year. The cost to field this additional force structure and the need to negotiate with each host nation also makes this option prohibitively expensive and not viable.

I believe our current proposed architecture will provide the best, most cost-effective protection for our European allies, and it can be deployed beginning in 2011. It would protect all European nations threatened by longer-range weapons from Iran. The cost of our European Missile Defense component proposal of \$3.5 billion non-recurring, and \$250 million per year to operate and maintain, is far less expensive and more effective than the \$16 billion, or more, and the \$600 million per year required for a less-

effective mobile ballistic missile defense architecture for Europe. The mobile alternative also would not provide any additional protection for the United States.

We also are developing the Multiple Kill Vehicle (MKV) system to upgrade long-range interceptor performance by attaining a volume kill capability to defeat multiple reentry vehicles and midcourse countermeasures. We have restructured the MKV program to develop land- and sea-based interceptor payloads by the middle of next decade. Besides bringing several kill vehicles to the fight, the MKV system will provide critical tracking and discrimination information to other system sensors and interceptors and assist with kill assessment. We have requested \$265 million for this work in FY 2008.

This budget submission also continues the upgrade of the Thule early warning radar in Greenland and its integration into the system by 2009. Together with the radars in California, Alaska and the United Kingdom, the Thule radar will ensure full coverage of the United States against threats from the Middle East. We will also continue to enhance additional forward-based X-band radar capabilities in Japan and other operating locations to meet warfighter needs.

We also will bolster defenses against short- to medium-range threats by increasing the inventory of Aegis BMD sea-based interceptors from 86 to 132 by 2013. Upgrades to the Standard Missile-3 include improvement of the Divert and Attitude Control System and discrimination performance. We also will provide a full upgrade of the Aegis BMD Weapon System to improve its ability to detect, acquire, and intercept more diverse, longer-range threats. At the end of the decade we will integrate Aegis BMD

with the Navy-developed Open Architecture system to remain compatible with Navy ships following modernization.

We will field two, and future plans call for four, Terminal High Altitude Area Defense (THAAD) fire units, which consist of radars and 96 interceptors. THAAD will provide transportable terminal protection for our troops and areas along the U.S. coasts or on the territories of our allies. The first unit will be fielded in 2009, with subsequent units fielded by 2012. We are requesting \$858 million in FY 2008 for THAAD development and fielding.

Developing Options for the Future

We do, of course, need to address far-term threats. In simplest terms, that means managing a program that balances initial, near-term fielding of system elements with long-term development. I continue to be a firm believer in the balanced program, because it neither compromises our security in the present nor short-changes our future safety. This approach recognizes the urgency of fielding capabilities to address threats we face today and the necessity of continuing support for vigorous development activities to prepare for tomorrow's ballistic missile challenges to our security.

I am in strong agreement with the Members of the House Armed Services Committee, who recently concluded that the country's missile defense program "must be scalable in response to the evolution of the threat."² The Missile Defense Agency plans to develop options for incrementally fielding elements of the ballistic missile defense

² House Armed Services Committee, *Committee Defense Review Report*, December 2006, p. 104.

system. We will do this by leveraging a key U.S. strength, our technological advantage, and by building with our allies a foundation of global access and response.

In executing our program we continue to follow a strategy of retaining alternative development paths until capability is proven—a knowledge-based funding approach. That means we are setting specific targets, or knowledge points, that the development efforts have to reach to demonstrate a specific capability.

There are several important development efforts funded in this budget. A significant part of missile defense investment has been devoted to the development of terrestrial boost phase defenses to supplement currently fielded midcourse and terminal defenses. An operational Airborne Laser (ABL) could provide a valuable boost phase defense capability against missiles of all ranges. We restructured the Kinetic Energy Interceptor (KEI) activity to focus on development of a high-acceleration booster, one that is more capable than any booster we currently have in inventory. Either ABL or the kinetic energy booster will be selected as the primary boost phase program upon completion of critical knowledge points before 2010.

Over the past two years we have demonstrated in ground tests the power and reliability of the ABL high energy lasers. We also have tested the command and control and passive target detection systems in flight. In 2006 we refurbished the high energy laser optics and completed integration and ground testing of the low-power tracking and beacon illuminator lasers. This year we will flight test the beam control and atmospheric compensation lasers against a cooperative airborne target. Earlier this month, we reached an important milestone in this program when we conducted the first in-flight test of the

laser targeting system, successfully demonstrating a technology that will help track a boosting ballistic missile and identify the most vulnerable sections on the rocket motor case to be hit by the high energy laser. We recently completed major structural modifications to the Boeing 747 aircraft to support installation of the high energy laser, which will continue in 2008. The \$516 million we request in FY 2008 will complete integration of the high energy laser modules with the modified aircraft as we prepare for a lethal shootdown of a ballistic missile target in 2009. Despite the continued technical challenges we face, I remain optimistic that we can produce an operationally effective directed energy capability.

We have made good progress in our high-acceleration booster development effort. This past year we successfully conducted the first static firings of the first and second stage boosters and demonstrated overhead non-imaging data fusion processing within the prototype fire control component. This high acceleration booster also would enhance the performance of the currently deployed Ground-Based Interceptor. Within the restructured program we will maintain options to develop a land-mobile launcher and fire control system as well as an option for a sea-based capability. We are requesting \$214 million in FY 2008 for this activity.

We plan to develop space-based sensors to provide a persistent identification and global tracking capability. A small constellation of Space Tracking and Surveillance System (STSS) satellites will enable operation of the missile defense system worldwide, independent of terrestrial-based sensors along the threat trajectory. These sensors will be able to detect and track enemy ballistic missiles and payloads through all phases of flight

and close the system fire control loop globally. We are on track to launch two demonstration satellites in November 2007. Next year, following on-orbit check-out, these demonstration satellites will perform live target acquisition, tracking and handover. We are requesting approximately \$319 million in FY 2008 to execute the Space Tracking and Surveillance System activity.

We have learned a great deal from the ground-testing of the STSS Block 2006 sensors in representative, thermal vacuum conditions. We have proven that this class of sensor will achieve the necessary sensitivity to support intercepts. Given the long design timelines for space systems, we are requesting funding in FY 2008 to begin work on the follow-on constellation. Postponing the start of this phase of the program will delay our ability to achieve a necessary global sensor and fire control capability.

This month launched a satellite, the Near Field Infrared Experiment (NFIRE), to collect high resolution infrared phenomenology data from boosting targets. Following preparation of the satellite once it is on-orbit, in August and October 2007, we will conduct tests using live ballistic missile targets. The data from NFIRE will be fed into simulation models and contribute to future sensor designs.

We will continue work with Japan to increase Standard Missile-3 range and lethality. The development of the 21-inch Standard Missile-3 Block IIA interceptor will increase our capability to engage longer-range ballistic missiles from Aegis BMD platforms and help close a capability gap around 2015. We have requested \$74 million in FY 2008 as part of our cooperative work with Japan to purchase long-lead items required for the development of this interceptor.

Another capability gap exists in terminal defense against short- and medium-range ballistic missiles. For the past two years, the Navy and the Missile Defense Agency (MDA) have collaborated on plans for a Sea-Based Terminal defensive layer. In May 2006 we demonstrated the feasibility of developing a limited near-term capability against a short-range ballistic missile using a modified Standard Missile-2 Block IV interceptor. Based on this demonstration, we are upgrading the Aegis weapon system, and the Navy is upgrading the SM-2 Block IV missile, the goal being to install a terminal engagement capability on 18 Aegis BMD ships beginning in 2009. We also are examining with the Navy options for developing a far-term improved capability to address short- and medium-range threats. Our FY 2008 request for Sea-Based Terminal development work is \$75 million.

The next generation of C2BMC capability will be essential if we are to close gaps in our command seams. As we deliver more sensor and interceptor capability into the hands of the warfighters, they are faced with several more options to defend their areas of responsibility. We must continually refine our C2BMC capability to allow the warfighters to rapidly process all of the available options, plan for the employment of BMDS assets, and globally manage the execution of the system on tight timelines. The battlefield effect is that the integrated BMD system can defend against more missiles simultaneously, reduce risk of missiles leaking through our defenses, conserve more interceptor inventory, and defend a larger area.

Finally, I am deeply concerned about future threat uncertainty and worldwide ballistic missile proliferation. I believe the performance of the BMD system could be

greatly enhanced by an integrated, space-based layer. Space systems could provide on-demand, near global access to ballistic missile threats, minimizing the limitations imposed by geography, absence of strategic warning, and the politics of international basing rights. A space layer would apply pressure on launches from land or sea, depriving the adversary of free rides into midcourse with advanced countermeasures. While deployment of such a system must be preceded by significant, national-level debate, that debate must be informed by science. To that end, we are ready to begin a focused investigation of the feasibility of having an integrated space-based layer, and I am requesting \$10 million for FY 2008 to begin concept analysis and preparation for small-scale experiments. These experiments will provide real data to answer a number of technical questions and help the leadership make a more informed decision about adding this capability.

We have had to restructure some development activities and cancel others as a result of congressional and departmental reductions in the Missile Defense Agency budget. The following program activities have been delayed: delivery of the first operational STSS satellite has slipped from 2012 to the 2016-2017 timeframe, prolonging the time we will be without a capability to integrate the system globally; and the scope of the KEI activity has been reduced to focus on booster development and delay work on system integration, battle management, and fire control. The reductions also have impacted work in the area of innovative technology development. I regret that we have had to cancel the advanced technology development work associated with our micro-satellite activities and eliminate funding for the High Altitude Airship beyond FY 2007.

International Participation

The global nature of the threat requires that we work closely with our allies and friends to develop, field, and operate missile defenses. I am pleased to report that many governments share our vision for missile defense. This past year we continued to build on a very successful program to involve more countries and forge international partnerships. Without the participation of our allies and friends, the ballistic missile defense system would look very different.

The Government of Japan remains solidly behind missile defense and has even accelerated its program to field multilayered missile defenses that are interoperable with the U.S. system. Japan continues to upgrade its Aegis destroyers and acquire Standard Missile-3 interceptors. In March 2006 we successfully flight-tested new nosecone technologies developed in cooperation with Japan. Additionally, the Missile Defense Agency and Japan have agreed to co-develop a Block IIA version of the Standard Missile-3, which will improve our defensive capabilities against longer-range missiles. Japan also is upgrading its Patriot fire units with Patriot Advanced Capability-3 missiles and improved ground support equipment. In 2008 Japan is expected to begin co-production of the PAC-3 missile.

The upgraded Royal Air Force Fylingdales radar in the United Kingdom will undergo operational testing this year. Once we certify the radar, it will provide the system critical early warning, tracking and cuing data needed to defeat threat missiles coming out of Iran. We are working closely with Denmark to upgrade the Thule early warning radar in Greenland to improve its capability to detect and track ballistic missiles.

Later this year we will conduct satellite-to-ground and satellite-to-satellite communication experiments with a German-built Laser Communications Terminal installed in the NFIRE satellite. Together with an identical terminal on a German satellite, the United States and Germany will perform joint experiments to validate the use of laser technology for high speed space communications.

The United States and The Netherlands have been working together to modify Dutch frigates with a combat system to enable ballistic missile detection and tracking. An upgraded air command and defense frigate from The Netherlands successfully detected and tracked the targets in the December 2006 Aegis ballistic missile defense flight test.

We are continuing work with Israel to implement the Arrow System Improvement Program and enhance its capability to defeat longer-range ballistic missile threats emerging in Iran. We are also conducting a feasibility study on a joint development program called David's Sling for shorter-range missile defense.

We continue to support our North Atlantic Treaty Organization (NATO) partners in advancing the dialogue on the political-military implications of defending European population centers against longer-range missile threats. The Missile Defense Agency is supporting the NATO Active Layered Tactical Ballistic Missile Defense Program Office to develop a capability to protect deployed forces by 2010.

I am also pleased to announce that this past February we put in place a Framework Memorandum of Agreement with Italy and we can now begin to develop opportunities for missile defense technology sharing, analysis, and other forms of collaboration. We have

other international interoperability and technical cooperation projects underway, for example with Australia, and are working to establish formal agreements with other governments.

Closing

Mr. Chairman, in closing, some have said that the Defense Department's investments in missile defense are misdirected, that other threats are more pressing. Others have said we are spending too much money on missile defense and that it is too expensive. And still others have claimed that we should slow down fielding activities until the technologies are more mature.

I disagree with these critics, Mr. Chairman. We must meet the rising threats posed by ballistic missiles. We have seen rogue nations test these weapons in the past year. Ballistic missile defense is expensive, but the dollar investment in this nation's security pales in comparison to the overwhelming price this nation would pay in lives, social dislocation, and economic devastation from a single missile impacting an American metropolitan area. Indeed, the success we have seen in our comprehensive test program indicates that there is no reason to slow down.

In less than three short years, thanks to the dedication of thousands of men and women across this country and a first-class, cutting-edge defense industry, we have deployed missile defenses to protect our homeland, our troops deployed to dangerous regions around the world, and our allies and friends. But we have a long way to go. So now is not the time to cut back missile defense. Now is the time to accelerate it.

Thank you and I look forward to your questions.